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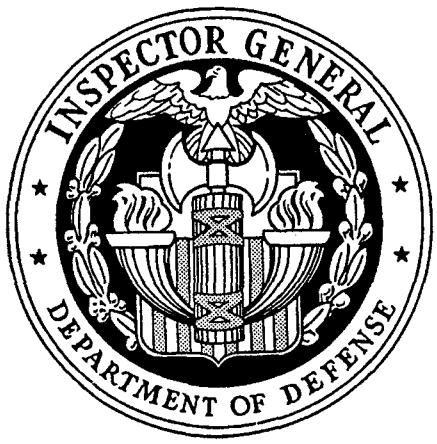

HAZARDOUS MATERIAL MANAGEMENT FOR THE
BLACK HAWK HELICOPTER PROGRAM

Report Number 99-242 August 23, 1999

Office of the Inspector General
Department of Defense

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Acronyms

PESHE	Programmatic Environmental, Safety, and Health Evaluation
SFFAS	Statement of Federal Financial Accounting Standards

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-2884

August 23, 1999

MEMORANDUM FOR AUDITOR GENERAL, DEPARTMENT OF THE ARMY

SUBJECT: Audit Report on Hazardous Material Management for the Black Hawk Helicopter Program (Report No. 99-242)

We are providing this audit report for information and use. The Joint Logistics Commanders requested an audit of hazardous material management for major Defense systems. This report is the fourth in a series of reports resulting from the requested audit.

We considered Army comments on a draft of this report in preparing this final report. The comments on the draft report conformed to the requirements of DoD Directive 7650.3. Therefore, we do not require additional comments.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Mr. John E. Meling at (703) 604-9091 (DSN 664-9091) (jmeling@dodig.osd.mil) or Mr. Jack D. Snider at (703) 604-9087 (DSN 664-9087) (jsnider@dodig.osd.mil). See Appendix C for the report distribution. The audit team members are listed inside the back cover.

David K. Steensma

David K. Steensma
Deputy Assistant Inspector General
for Auditing

Office of the Inspector General, DoD

Report No. 99-242 **August 23, 1999**
(Project No. 8AE-5037.04)

Hazardous Material Management for the Black Hawk Helicopter Program

Executive Summary

Introduction. The UH-60 Black Hawk Helicopter (the Black Hawk), an Acquisition Category IC Program, is a utility, tactical, and transport helicopter that performs many missions in the Army. The Black Hawk is the primary helicopter for air assault, general support, and aeromedical evacuation units; and fulfills command and control, electronic warfare, and special operations roles. In 1978, the Black Hawk entered the production and fielding phase of the acquisition cycle. From 1978 through 1989, the Army procured UH-60A Black Hawk helicopters. In October 1989, the Army upgraded the power train system that resulted in a model designation change from UH-60A to UH-60L. By FY 2005, the Army plans to acquire 1,626 Black Hawk helicopters at an estimated total program cost of $10.5 billion. The Army has deployed over 1,300 Black Hawk helicopters.

Objectives. The Joint Logistics Commanders requested an audit of hazardous material management for major Defense systems. The Black Hawk is one of a series of programs included in the audit. The overall audit objective of this report was to evaluate the adequacy of planning and providing for the reduction and control of hazardous materials used in the design, manufacture, maintenance, and disposal of the Black Hawk. Specifically, we evaluated whether the program manager managed the selection, use, and disposal of hazardous materials so that DoD incurs the lowest cost possible that is consistent with the system's cost, schedule, and performance goals while protecting human health and the environment over the system's life cycle. We also evaluated the management control program as it related to the audit objective.

Results. Overall, the Utility Helicopters Project Office planned and provided for the reduction and elimination of hazardous materials in the Black Hawk Program. However, the following areas warrant management attention.

- The Utility Helicopters Project Office for the Black Hawk did not include environmental costs for demilitarization, disposal, and associated cleanup of the Black Hawk in the system life-cycle cost estimate. As a result, the Project Office understated the total life-cycle costs and would not be able to accurately report the liability for demilitarization, disposal, and environmental cleanup costs when DoD guidance for reporting those costs in financial statements becomes available (finding A).

- The Utility Helicopters Project Office for the Black Hawk did not include program environmental responsibilities and a methodology to track and document the completion of the environmental strategy throughout the acquisition life-cycle in its programmatic environmental, safety, and health evaluation (PESHE). Without a PESHE that includes program environmental responsibilities and a methodology to track and document the completion of the environmental strategy, the Project Office cannot ensure

that it is aware of the impact of environmental, safety, and health issues on mission and cost and may be forgoing opportunities to further reduce environmental life-cycle costs over the life span of the Black Hawk (finding B).

Recommendations in this report, if implemented, will improve the hazardous material management of the Black Hawk Program. The management controls reviewed were effective in that we identified no material management control weakness (Appendix A).

Summary of Recommendations. We recommend that the Army develop an environmental cost estimate for demilitarization, disposal, and associated cleanup of the Black Hawk as part of its modernization program; include the environmental cost estimate for demilitarization, disposal, and associated cleanup of the Black Hawk in the system life-cycle cost estimate for its modernization program; develop a plan for the demilitarization, disposal, and associated cleanup of the Black Hawk as part of its modernization program; update the PESHE for the Black Hawk as part of its modernization program to include program environmental responsibilities and a methodology to track and document the completion of the environmental strategy; and update the PESHE throughout the life cycle of the Black Hawk as part of its modernization program.

Management Comments. We received comments from the Office of the Assistant Secretary of the Army (Acquisition, Logistics, and Technology). Although the Office of the Assistant Secretary nonconcurred with the findings and recommendations, it provided suggested additions to the recommendations concerning the environmental cost estimate; demilitarization, disposal, and cleanup plan; and PESHE update that it would agree to if implemented. We implemented those additions to the recommendations. The Office of the Assistant Secretary of the Army also agreed to include the environmental cost estimate for demilitarization, disposal, and associated cleanup of the Black Hawk in the system life-cycle cost estimate for its modernization program. A discussion of the management comments is in the Findings section of the report, and the complete text is in the Management Comments section.

Audit Response. The comments from the Office of the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) were responsive to our recommendations. Therefore, no additional comments are required in response to this report.

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UH-60 Black Hawk Helicopter

Background

This report discusses the adequacy of planning and providing for the reduction and control of hazardous materials used in the design, manufacture, maintenance, and disposal for the UH-60 Black Hawk Helicopter (the Black Hawk). DoD environmental management policy relating to hazardous materials is to prevent, mitigate, or remediate environmental damage that acquisition programs cause. In designing, manufacturing, testing, operating, and disposing of systems, DoD program managers are to prevent or reduce all forms of pollution at the source, whenever feasible. Prudent investments in pollution prevention can reduce life-cycle environmental costs and liability and improve environmental quality and program performance. Further, the Secretary of Defense, in his 1998 annual report to the President and Congress, stated that DoD urgently needed to reduce the total ownership costs of its systems to sustain force modernization and recapitalization. To reduce total ownership costs, program managers need to focus on total life-cycle costs in the development and production phases of the weapon system acquisition life-cycle so that trade-offs can be made between investments in the development and production phases and reduced costs in the operation and support phase. Appendix B provides definitions of technical terms used in this report.

The Black Hawk, as shown on the opposite page, an Acquisition Category IC Program, is a utility, tactical, and transport helicopter that performs many missions in the Army.[1] The Black Hawk is the primary helicopter for air assault, general support, and aeromedical evacuation units; and fulfills command and control, electronic warfare, and special operations roles. In 1978, the Black Hawk entered the production and fielding phase of the acquisition cycle. From 1978 through 1989, the Army procured UH-60A Black Hawk helicopters. In October 1989, the Army upgraded the power train system that resulted in a model designation change from UH-60A to UH-60L. By FY 2005, the Army plans to acquire 1,626 Black Hawk helicopters from United Technologies, Sikorsky Aircraft Division, Stratford, Connecticut, with engines from General Electric Company, Lynn, Massachusetts, at an estimated total program cost of $10.5 billion. The Corpus Christi Army Depot, Corpus Christi, Texas, provides depot maintenance for the helicopter. The Army has deployed over 1,300 Black Hawk helicopters.

The Utility Helicopters Project Office for the Black Hawk anticipates that it will begin receiving funding in FY 2002 to begin the Black Hawk Modernization Program.

Objectives

The Joint Logistics Commanders requested an audit of hazardous material management for major Defense systems. The Black Hawk is one in a series of

[1]The Navy and the Air Force have variants of the Black Hawk; however, this audit only focuses on the Army variant of the Black Hawk.

programs included in the audit. The overall audit objective of this report was to evaluate the adequacy of planning and providing for the reduction and control of hazardous materials used in the design, manufacture, maintenance, and disposal for the Black Hawk. Specifically, we evaluated whether the program manager managed the selection, use, and disposal of hazardous materials so that DoD incurs the lowest cost possible that is consistent with the system's cost, schedule, and performance goals while protecting human health and the environment over the system's life cycle. We also evaluated the management control program as it related to the audit objective. This report is the fourth in a series of reports on our ongoing audit of hazardous material management for major Defense systems. The first three reports address hazardous material management for the Army Grizzly Program, the Air Force C/KC-135 Stratotanker Aircraft, and the Navy T-45 Undergraduate Jet Pilot Training System. Appendix A discusses the scope and methodology used to accomplish the objective as well as management controls and prior audit coverage.

Noteworthy Environmental Efforts

The Utility Helicopters Project Office incorporated environmental planning into the acquisition process by coordinating three initiatives to reduce ozone depleting substances in the Black Hawk, by including hazardous materials management provisions in Black Hawk production contracts, by implementing the National Environmental Policy Act, and by establishing environmental teams. In addition, the Corpus Christi Army Depot has instituted pollution prevention initiatives.

Initiatives to Reduce Ozone Depleting Substances. To reduce ozone depleting substances in the Black Hawk, the Project Office coordinated three initiatives: a Halon 1301 replacement, handheld fire extinguishers with carbon dioxide, and a non-ozone depleting refrigerant. For the Halon 1301 replacement initiative, the Project Office has coordinated an ongoing joint Military Service Black Hawk initiative to replace Halon 1301 in the Black Hawk with a non-ozone depleting fire extinguishing system for the helicopter engine. For the handheld fire extinguisher initiative, the Army Aviation and Missile Command has under contract carbon-dioxide-filled handheld fire extinguishers to replace halon-filled ones. For the non-ozone depleting refrigerant initiative, the Army Communications-Electronics Command began in May 1999 to replace the freon in the environmental control system in the EH-60 Black Hawk with a non-ozone depleting refrigerant.

Hazardous Materials Management Provisions. Production contracts for the helicopter and the engine for the UH-60L Black Hawk helicopter and the contract for the procurement and integration of medical mission kits for the UH-60Q aeromedical evacuation model of the Black Hawk helicopter contained required environmental provisions. The contracts required the contractors to eliminate, reduce, or control hazardous materials in the manufacture of the Black Hawk and report on environmental issues during Black Hawk program reviews.

National Environmental Policy Act. In June 1976, the Project Office completed an environmental assessment for the UH-60A Black Hawk that evaluated the probable adverse impacts on the human and natural environment. The assessment resulted in a finding of no significant impact. In September 1989, the Project Office updated the 1976 environmental assessment with a record of environmental consideration for the UH-60L Black Hawk to explain why further environmental analyses and documentation were not needed. The Project Office plans to complete by August 31, 1999, an environmental assessment for the UH-60Q Black Hawk to evaluate the potential environmental impacts on the development, production, operation, maintenance, support, and demilitarization and disposal of the UH-60Q Black Hawk.

Environmental Teams. The Army Aviation and Missile Command and the Utility Helicopters Project Office established the Environmental Technology Team and the Environmental, Safety, and Health Management Team, respectively, to improve environmental management.

Environmental Technology Team. The Army Aviation and Missile Command established the Environmental Technology Team (the Team), consisting of personnel from the Directorate of Environmental Management and Planning and the Aviation Research, Development and Engineering Center. The Team conducts reviews of the maintenance documents for Army aviation and missile systems, including the Black Hawk. To conduct the reviews, the Team identifies hazardous materials used in the maintenance process and potential alternative materials and oversees the qualification and testing of alternative materials. On a quarterly basis, the Team holds meetings with representatives from the Corpus Christi Army Depot to review the status of finding replacements for hazardous materials in the helicopter maintenance process and to discuss Corpus Christi Army Depot pollution prevention initiatives.

Environmental, Safety, and Health Management Team. The Project Office chartered the Environmental, Safety, and Health Management Team to provide a forum to integrate environmental, safety, and health compliance issues into the systems engineering process for the Black Hawk and to advise the Project Office on measures to reduce the impact of hazardous materials in the design, production, maintenance, support, and demilitarization and disposal of the Black Hawk.

Pollution Prevention Initiatives. The Corpus Christi Army Depot initiated pollution prevention initiatives using its capital improvement funds. For example, the Corpus Christi Army Depot has a FLASHJET™ paint removal system under construction that is to be operational in December 1999. When operational, this system will replace chemical and media blast systems and will provide production, environmental, and worker health and safety benefits.

Overall, the Utility Helicopters Project Office for the Black Hawk planned and provided for the reduction and elimination of hazardous material in the Black Hawk. However, Project Office did not estimate in its system life-cycle costs the environmental costs for demilitarization, disposal, and cleanup of the Black Hawk and did not develop a programmatic environmental, safety, and health evaluation that included program environmental responsibilities and a

methodology to track and document the completion of the environmental strategy throughout the acquisition life-cycle. A discussion of the associated findings follows.

A. Environmental Life-Cycle Costs

The Utility Helicopters Project Office for the Black Hawk did not include environmental costs for demilitarization, disposal, and associated cleanup of the Black Hawk in the system life-cycle cost estimate. The Project Office excluded those environmental costs because it believed those environmental costs were not significant enough to estimate because the Army anticipated donating and selling the helicopters instead of disposing of them. However, the Project Office did not have a plan for the donation and sale of the helicopters. As a result, the Project Office understated the total life-cycle costs for the Black Hawk and would not be able to accurately report the liability for demilitarization, disposal, and environmental cleanup costs for the Black Hawk in the Army's financial statements when DoD guidance for reporting those costs in financial statements becomes available.

Life-Cycle Cost Estimating and Reporting Guidance

DoD Guidance. DoD Regulation 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs," Change 4, May 11, 1999;[2] DoD Manual 5000.4-M, "Department of Defense Cost Analysis Guidance and Procedures," December 1992; and the Defense Acquisition Deskbook provide life-cycle cost estimating and reporting guidance.

DoD Regulation. DoD Regulation 5000.2-R requires that life-cycle cost estimates be comprehensive and identify all costs for the development, production, and operation of a system regardless of the source of funding. Further, the Regulation requires that, for all Acquisition Category I and IA programs, the program office must prepare a life-cycle cost estimate in support of program initiation (usually Milestone I) and all subsequent milestone reviews.

DoD Manual. DoD Manual 5000.4-M requires that program offices identify the cost of any hazardous, toxic, or radiological materials that may be encountered or generated during system development, manufacture, transportation, storage, operation, and disposal. Furthermore, the guidance states that program offices should include the costs of demilitarization, detoxification, or long-term waste storage in the cost estimates.

Defense Acquisition Deskbook. The Defense Acquisition Deskbook addresses life-cycle estimates in its "Scope of Life-Cycle Cost Estimates" and the "Cost Estimate Documentation Guidelines" sections. Specifically, the Deskbook states that life-cycle cost estimates should:

- cover the entire planned life of a program and include all cost categories (concept exploration, if applicable; demonstration

[2]DoD initially issued DoD Regulation 5000.2-R on March 15, 1996. It included the requirement to prepare a comprehensive life-cycle cost estimate.

and validation; engineering and manufacturing development; production and deployment; operations and support; and demilitarization and disposal) and all appropriation accounts; and

- address environmental costs (examples of such costs include pollution prevention, hazardous waste management, demilitarization and disposal of equipment, and cleanup of real estate).

Army Guidance. The "Department of Army Cost Analysis Manual," July 1997 (the Cost Manual), Chapter 6, "Environmental Costing," states that all life-cycle cost estimates must address environment costs. Further, the Cost Manual requires that program office estimates of life-cycle costs include all relevant environmental costs as early as the concept exploration phase. Those costs include activities related to pollution prevention, compliance, remediation, restoration, conservation, litigation, liability, added management or overhead costs, and demilitarization and disposal of the system. Where environmental costs cannot be separately broken out, the Cost Manual states that the life-cycle cost estimate should present evidence that the environmental costs are adequately accounted for elsewhere in the estimate.

Federal Financial Accounting Standards Guidance. The Statement of Federal Financial Accounting Standards (SFFAS) No. 6, "Accounting for Property, Plant, and Equipment," requires that Federal agencies, beginning in FY 1998, recognize a liability in agency financial statements for cleanup costs associated with Federal property, plant, and equipment, including weapons systems, when the agency places the property, plant, and equipment into service. SFFAS No. 6 defines cleanup costs as those costs to remove, contain, or dispose, or any combination of the three, of hazardous waste from material or property that is permanently or temporarily shut down. In addition, cleanup costs include decontamination, decommissioning, site restoring, site monitoring, and closure and post-closure costs. However, DoD has yet to provide guidance to the Military Departments for reporting on the environmental liability.

Black Hawk Life-Cycle Cost Estimate

The Utility Helicopters Project Office did not include environmental costs for demilitarization, disposal, and cleanup of the Black Hawk in the system life-cycle cost estimate because it believed that the environmental costs were not significant. The Project Office stated that the demilitarization, disposal, and associated cleanup costs were not significant enough to estimate as the Army anticipated donating and selling the helicopters instead of disposing of them at the end of their useful life. However, the Project Office did not have a demilitarization and disposal plan for the Black Hawk to describe how the Army would deactivate or render the system inoperable by destroying its inherent military offensive and defensive capabilities or how the Army would redistribute, transfer, donate, and sell the system. The Project Office did plan

to provide funds in FYs 1997 and 1998 to a support contractor to prepare a demilitarization strategy and to address helicopter disposal for the Black Hawk; however, the task was unfunded.

The Project Office stated that, when it prepared the system life-cycle cost estimate for previous acquisition milestones, including the production milestone, it did not include demilitarization, disposal, and associated cleanup of the Black Hawk. For the Black Hawk Modernization Program beginning in FY 2002, the Project Office plans to prepare a system life-cycle cost estimate. However, the Project Office stated that, if it were to develop an estimate for demilitarization, disposal, and associated cleanup costs, those costs would be difficult to estimate because the Army would not begin disposal of any Black Hawk helicopters until 2025. The Project Office should develop a system life-cycle cost estimate that includes demilitarization, disposal, and associated cleanup costs for the Black Hawk in accordance with DoD Manual 5000.4-M and the "Department of the Army Cost Analysis Manual."

Estimating and Reporting DoD Liability for Aircraft Disposal

The General Accounting Office Report No. AIMD-98-9, "DoD's Liability for Aircraft Disposal Can Be Estimated," November 1997, states that:

- DoD did not implement SFFAS No. 6 that requires recognizing and reporting liabilities such as those associated with aircraft disposal.
- DoD did not provide implementation guidance to the Military Departments.
- Aircraft disposal was an ongoing process and the Military Departments could reasonably estimate the disposal cost.
- Information on the three major disposal processes, namely demilitarization, storage and maintenance, and hazardous materials removal and disposal, was available to help develop cost estimates.
- DoD officials stated that the total disposal cost estimate for aircraft would result in a significant liability.

The Report also states that Congress, in the National Defense Authorization Act for FY 1995, required DoD to develop life-cycle environmental costs, including demilitarization and disposal costs, for new weapon systems.

Completeness of Life-Cycle Cost Estimate

Without a life-cycle cost estimate that includes demilitarization, disposal, and environmental cleanup costs, the Utility Helicopters Project Office for the Black Hawk could not accurately report the liability for Black Hawk environmental cleanup and disposal costs in future Army financial statements. Because the Black Hawk is a fielded system, the Army is required to report the

environmental cleanup and disposal cost liability in accordance with SFFAS No. 6 when DoD guidance becomes available. Although demilitarization, disposal, and environmental cleanup costs may not be highly significant in terms of percentage of system life-cycle cost, they should not be ignored. Cumulatively, the environmental cleanup and disposal costs for Army weapon systems are likely to represent a material value on Army and DoD-wide consolidated financial statements.

Management Comments on the Finding and Audit Response

Management Comments on the Applicability of the Guidance. The Deputy for Systems Management and Horizontal Technology Integration, Office of the Assistant Secretary of the Army (Acquisition, Logistics, and Technology), nonconcurred with the finding, stating that the DoD guidance to support the finding was not applicable to the Black Hawk Program because the Program has been in full-rate production since 1978. He stated that DoD Regulation 5000.2-R requires reports to be submitted as part of the milestone reviews for a program; however, the Black Hawk Program has not had any milestone reviews since entering full-rate production. He understood that no requirement exists to retroactively apply the guidance to systems currently in production. He recommended that we rewrite the finding to state that:

- the Utility Helicopters Project Office met the life-cycle cost requirements in effect in 1978 when the Black Hawk Program entered production and

- the Project Office would need to comply with DoD guidance in the future should the Black Hawk Modernization Program be subject to a milestone review.

The complete text is in the Management Comments section of this report.

Audit Response. The finding addresses the need for a current environmental cost estimate and a plan for demilitarization, disposal, and associated cleanup of the Black Hawk Program and any future modernization program so that the Utility Helicopters Project Office can:

- accurately report the liability for Black Hawk environmental cleanup and disposal costs, including pollution prevention, hazardous waste management, demilitarization and disposal of the system, and cleanup of real estate, in future Army financial statements;

- determine environmental cost resource requirements for future budget submissions; and

- ensure that the Black Hawk Program and any future modernization program incur the lowest cost possible that is consistent with the system's cost, schedule, and performance goals while protecting human health and the environment over the system's life cycle.

Further, by having and executing a plan for demilitarization, disposal, and associated cleanup of the Black Hawk Program and any future modernization program, the Project Office can:

- ensure that it complies with Federal, state, and local laws for the disposal of hazardous materials associated with the system;
- describe how the Army will deactivate or render the system inoperable by destroying its inherent military offensive and defensive capabilities; and
- specify how the Army will redistribute, transfer, donate, and sell the system.

In addition, the guidance cited is applicable for preparing the environmental cost estimate and the plan for demilitarization, disposal, and associated cleanup of the Black Hawk Program and any future modernization program and for reporting the environmental cleanup and disposal liability associated with the system.

Recommendations, Management Comments, and Audit Response

Revised Recommendations. As a result of the management comments, we revised draft Recommendations A.1. and A.3. by adding the phrase "as part of the Black Hawk Modernization Program" to the recommendations.

A. We recommend that the Project Manager, Utility Helicopters Project Office:

1. Develop an environmental cost estimate for demilitarization, disposal, and associated cleanup of the UH-60 Black Hawk Helicopter Program, as part of the Black Hawk Modernization Program.

2. Include the environmental cost estimate for demilitarization, disposal, and associated cleanup of the UH-60 Black Hawk Helicopter Program in the system life-cycle cost estimate for its modernization program.

3. Develop a plan for the demilitarization, disposal, and associated cleanup of the UH-60 Black Hawk Helicopter Program, as part of the Black Hawk Modernization Program.

Management Comments. The Deputy for Systems Management and Horizontal Technology Integration, Office of the Assistant Secretary of the Army (Acquisition, Logistics, and Technology), concurred with Recommendation A.2. and with Recommendations A.1. and A.3. if we added the phrase "as part of the Black Hawk Modernization Program" to those recommendations. He stated that, if the Army funds the Black Hawk Modernization Program, the Black Hawk Program will comply with the

guidance cited in the report as long as the associated milestone review requires an environmental cost estimate and a plan for demilitarization, disposal, and associated cleanup of the Program. Further, he stated that, as of July 29, 1999, the Army is considering funding for the Black Hawk Modernization Program in its the FY 2001 budget submission. The complete text is in the Management Comments section of this report.

Audit Response. If the Army does not fund the Black Hawk Modernization Program or if the associated milestone review does not require an environmental cost estimate and plan, the Utility Helicopters Project Office will still need to develop an environmental cost estimate and a plan for demilitarization, disposal, and associated cleanup of the Black Hawk Program to:

- provide environmental cost resource requirements for future budget submissions and future Army financial statements;
- ensure that it complies with Federal, state, and local laws for the disposal of hazardous materials associated with the system;
- describe how the Army will deactivate or render the system inoperable by destroying its inherent military offensive and defensive capabilities; and
- specify how the Army will redistribute, transfer, donate, and sell the system.

B. Programmatic Environmental, Safety, and Health Evaluation

The Utility Helicopters Project Office for the Black Hawk did not include program environmental responsibilities and a methodology to track and document the completion of the environmental strategy throughout the acquisition life-cycle in its programmatic environmental, safety, and health evaluation (PESHE). The Project Office did not include environmental responsibilities and a tracking and documenting methodology in its PESHE because it believed that its response to an environmental compliance review in FY 1998 of the Black Hawk complied with PESHE requirements. Without a PESHE that includes program environmental responsibilities and a methodology to track and document the completion of the environmental strategy, the Project Office cannot ensure that it is aware of the impact of environmental, safety, and health issues on mission and cost and may also be forgoing opportunities to further reduce environmental life-cycle costs over the life span of the Black Hawk.

Environmental, Safety, and Health Evaluation Policy

DoD Guidance. DoD Regulation 5000.2-R, Change 4, May 11, 1999,[3] requires that all programs, regardless of acquisition category, conduct environmental, safety, and health analyses to integrate environmental, safety, and health issues into the system engineering process. The analyses must support the development of a PESHE that the program office includes in the acquisition strategy. The program manager must initiate the PESHE at the earliest possible time, usually in support of a program initiation decision (Milestone I), and must update the evaluation throughout the life cycle of the program. Acquisition managers use the PESHE to:

- describe the program manager's strategy for meeting environmental, safety, and health requirements;
- establish program responsibilities; and
- identify how a program manager will track progress.

Environmental, Safety, and Health Evaluation

The Utility Helicopters Project Office for the Black Hawk did not develop a PESHE that included program environmental responsibilities and a methodology to track and document the completion of the environmental strategy throughout

[3]DoD initially issued DoD Regulation 5000.2-R on March 15, 1996. It included the environmental, safety, and health evaluation policy.

the acquisition life-cycle because it believed that its response to an environmental compliance review complied with PESHE requirements.

Compliance Review. In January 1998, the Directorate for Environmental Management and Planning (the Directorate) at the Army Aviation and Missile Command conducted an Army environmental compliance review. The review assessed whether program offices under the management of the Office of the Deputy for Systems Acquisition at the Army Aviation and Missile Command complied with the DoD Regulation 5000.2-R environmental requirements. After its review, the Directorate sent the Utility Helicopters Project Office a memorandum on May 12, 1998, outlining the environmental requirements in the DoD Regulation 5000.2-R and stating that the Project Office had not provided the Directorate with all necessary environmental documents for its review. The memorandum recommended that the Project Office develop an environmental, safety, and health evaluation plan (the evaluation plan) and establish an environmental, safety, and health management team (the management team) to integrate environmental, safety, and health issues into the system engineering process.

In response to Directorate's memorandum, the Project Office sent a memorandum on June 16, 1998, providing:

- Black Hawk environmental assessment documentation,
- copies of the contract environmental clauses in the Black Hawk helicopter and engine production contracts, and
- documentation of the Project Office's implementation of an evaluation plan and plans to establish the management team.

In July 1998, the Project Office established the management team. After receiving this additional documentation, the Directorate did not provide written comments in response to the Project Office memorandum. According to Directorate personnel, compliance with environmental guidance is the responsibility of the Project Office and they, the Directorate personnel, do not provide written comments to actions taken in response to their reviews. After receiving the Project Office memorandum, the Directorate provided the Project Office with a memorandum of agreement for environmental support from FY 1999 through FY 2004 for the Project Office's review and approval. The Project Office did not approve the memorandum of agreement and concluded that it was in compliance with DoD Regulation 5000.2-R environmental requirements.

PESHE Documentation. Even though the Project Office believed that it complied with DoD Regulation 5000.2-R environmental requirements, the PESHE documentation that it provided to the Directorate did not include program environmental responsibilities or a methodology to track and document the completion of the environmental strategy throughout the acquisition life-cycle. The PESHE documentation did reference the "Utility Helicopters Business Plan Environmental Section," March 1996, that included a pollution prevention strategy describing the Project Office's pollution prevention initiatives.

In May 1999, the Project Office began developing a PESHE for the Black Hawk Modernization Program. However, the Project Office has not indicated whether the PESHE will:

- include the program environmental responsibilities and a methodology to track and document the completion of the environmental strategy throughout the acquisition life-cycle,
- be completed for the Black Hawk Modernization Program beginning in FY 2002, and
- be updated throughout the life cycle of the Black Hawk as changes occur to the configuration of the system.

Benefits of Environmental, Safety, and Health Evaluation

When program managers perform the analyses for the PESHE, they gain timely information on the potential environmental, safety, and health effects of developing, fielding, storing, demilitarization, and disposing of their weapon systems. The information is critical because any unforeseen environmental, safety, or health effects that violate local, state, or Federal law could cause lengthy program delays and affect mission and program cost. Moreover, negative effects may lessen opportunities to further reduce maintenance-process environmental life-cycle costs over the life span of the Black Hawk, including upgrades to the program, as appropriate. Therefore, the program manager should analyze and document all possible programmatic actions and update the evaluation throughout the program's life cycle.

Management Comments on the Finding and Audit Response

Management Comments on the Applicability of the Guidance. The Deputy for Systems Management and Horizontal Technology Integration, Office of the Assistant Secretary of the Army (Acquisition, Logistics, and Technology), nonconcurred with the finding, stating that the Black Hawk Program was already in production at the time OSD implemented DoD Regulation 5000.2-R, March 15, 1996, and Change 4, May 11, 1999, and did not have a milestone review after the effective date of the Regulation. Further, he stated that the Utility Helicopters Project Office provided environmental documentation that met the requirements in effect at the time the Black Hawk Program entered production. The complete text is in the Management Comments section of this report.

Audit Response. The Project Office did develop PESHE documentation under DoD Regulation 5000.2-R, March 15, 1996, that included a pollution prevention strategy, and provided that documentation to the Directorate for Environmental Management and Planning, Army Aviation and Missile Command, on June 16, 1998. However, the Project Office did not include program environmental responsibilities and a methodology to track and document the completion of the environmental strategy in its PESHE

documentation. Without establishing program environmental responsibilities and identifying the methodology to track and document the completion of the environmental strategy, the Project Manager will not be able to:

- determine who is responsible for ensuring that the Black Hawk Program and any future modernization program meets environmental, safety, and health requirements;
- track and document whether the system is meeting environmental, safety, and health requirements;
- determine whether the system is experiencing any unforeseen environmental, safety, or health effects that violate local, state, or Federal law before they could cause lengthy program delays and affect mission and program cost; and
- proactively identify negative effects that may lessen opportunities to further reduce maintenance-process environmental life-cycle costs over the life span of the system.

We revised the first paragraph of the finding and the executive summary to clarify that the Utility Helicopter Project Office did prepare PESHE documentation; however, it did not include in the documentation program environmental responsibilities and a methodology to track and document the completion of the environmental strategy throughout the acquisition life-cycle of the system.

Recommendations, Management Comments, and Audit Response

Revised Recommendations. As a result of the management comments, we revised draft Recommendations B.1. and B.2. by adding the phrase "as part of the Black Hawk Modernization Program" to the recommendations.

B. We recommend that the Project Manager, Utility Helicopters Project Office:

1. Update the programmatic environmental, safety, and health evaluation documentation for the UH-60 Black Hawk Helicopter Program to include program environmental responsibilities and a methodology to track and document the completion of the environmental strategy throughout the acquisition life-cycle as part of the Black Hawk Modernization Program.

2. Update the programmatic environmental, safety, and health evaluation documentation throughout the life cycle of the UH-60 Black Hawk Helicopter Program and as part of the Black Hawk Modernization Program.

Management Comments. The Deputy for Systems Management and Horizontal Technology Integration, Office of the Assistant Secretary of the

Army (Acquisition, Logistics, and Technology), concurred with Recommendations B.1. and B.2. if we added the phrase "as part of the Black Hawk Modernization Program" to those recommendations. He stated that, if the Army funds the Black Hawk Modernization Program, the Black Hawk Program will comply with the guidance cited in the report as long as the associated milestone review requires updates to the PESHE. Further, he stated that, as of July 29, 1999, the Army is considering funding for the Black Hawk Modernization Program in its the FY 2001 budget submission. The complete text is in the Management Comments section of this report.

Audit Response. If the Army does not fund the Black Hawk Modernization Program or if the associated milestone review does not require updates to the PESHE, the Utility Helicopters Project Office will still need to include program environmental responsibilities and a methodology to track and document the completion of the environmental strategy in its PESHE to:

- determine who is responsible for ensuring that the Black Hawk Program and any future modernization program meets environmental, safety, and health requirements; and

- track and document whether the system is meeting environmental, safety, and health requirements.

Further, a PESHE that includes program environmental responsibilities and a methodology to track and document the completion of the environmental strategy will help to prevent environmental pollution, which is easier and cheaper to prevent than it is to cleanup and dispose of after it occurs.

Appendix A. Audit Process

Scope and Methodology

We conducted this audit from March 1999 through May 1999 and reviewed documentation dated from June 1976 through May 1999. To accomplish the audit objective, we took the following steps:

- discussed the issues relating to DoD environmental management and the associated acquisition strategy with Government and contractor personnel;
- assessed whether the Utility Helicopters Project Office implemented the DoD environmental management process in accordance with DoD Regulation 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs," Change 4, May 11, 1999;
- reviewed life-cycle costs of the Black Hawk Program to determine whether the Project Office included environmental costs;
- evaluated Defense Contract Management Command involvement to reduce life-cycle environmental costs and liability while improving environmental quality and program performance;
- reviewed contractors' environmental program for the Black Hawk Program and reviewed available supporting documentation;
- determined whether the Project Office had adequate funding to test alternative environmental technologies to reduce pollution;
- determined whether the Project Office searched for opportunities to form partnerships for environmental projects, environmental alternative test and evaluation, and validation testing;
- determined whether the Project Office was aware of the environmental management process; and
- reviewed the Army's maintenance support process to reduce environmental pollution for the Black Hawk Program.

Auditing Standards. We conducted this program audit in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We included such tests of management controls as we deemed necessary.

Use of Computer-Processed Data. We did not rely on computer-processed data to develop conclusions on this audit.

Contacts During the Audit. We visited or contacted individuals and organizations within DoD and United Technologies, Sikorsky Aircraft Division, Stratford, Connecticut. Further details are available on request.

DoD-Wide Corporate-Level Government Performance and Results Act Goals. In response to the Government Performance and Results Act, DoD established 6 DoD-wide corporate-level performance objectives and 14 goals for meeting the objectives. This report pertains to achievement of the following objective and goal.

> **Objective:** Fundamentally reengineer DoD and achieve a 21st century infrastructure. **Goal:** Reduce costs while maintaining required military capabilities across all DoD mission areas. **(DoD-6)**

DoD Functional Area Reform Goals. Most major DoD functional areas have also established performance improvement reform objectives and goals. This report pertains to achievement of the following acquisition functional issue area objective and goal.

> **Objective:** Fostering Partnerships. **Goal:** Reduce total release of toxic chemicals by 20 percent. **(ACQ-2.4)**

General Accounting Office High-Risk Area. The General Accounting Office has identified several high-risk areas in DoD. This report provides coverage of the Defense Weapons Systems Acquisition high-risk area.

Management Control Program Review

The DoD Directive 5010.38, "Management Control (MC) Program," August 26, 1996, requires DoD managers to implement a comprehensive system of management controls that provides reasonable assurance that programs are operating as intended and to evaluate the adequacy of the controls.

Scope of Review of the Management Control Program. In accordance with DoD Directive 5000.1, "Defense Acquisition," March 15, 1996, and DoD Regulation 5000.2-R, acquisition managers are to use program cost, schedule, and performance parameters as control objectives to implement the requirements of DoD Directive 5010.38. Accordingly, we limited our review to management controls directly related to the hazardous material management of the Black Hawk. Because we did not identify a material weakness, we did not assess management's self-evaluation.

Adequacy of Management Controls. Management controls were adequate in that we did not identify any material management control weakness applicable to the audit objective.

Summary of Prior Coverage

During the last 5 years, the General Accounting Office; the Inspector General, DoD; and the Military Department audit agencies have not issued reports specifically addressing the adequacy of planning and providing for the reduction and control of hazardous materials for the Black Hawk. The Inspector General, DoD, recently issued three final reports that address hazardous material management for major Defense systems and a final report that addresses reporting environmental and disposal liabilities.

Inspector General, DoD, Report No. 99-221, "Hazardous Material Management for the T-45 Undergraduate Jet Pilot Training System," July 21, 1999.

Inspector General, DoD, Report No. 99-177, "Hazardous Material Management for the C/KC-135 Stratotanker Aircraft," June 4, 1999.

Inspector General, DoD, Report No. 99-160, "Hazardous Material Management on the Grizzly Program," May 17, 1999.

Inspector General, DoD, Report No. 99-209, "Data Supporting the DoD Environmental Line Item Liability on the FY 1998 Financial Statements," July 9, 1999.

Appendix B. Definitions of Technical Terms

Acquisition Category. An acquisition category is an attribute of an acquisition program that determines the program's level of review, decision authority, and applicable procedures. The acquisition categories consist of I, major Defense acquisition programs; IA, major automated information systems; II, major systems; and III, all other acquisition programs.

Demilitarization. Demilitarization is part of the disposal process and is the act of deactivating or rendering a system inoperable by destroying its inherent military offensive or defensive advantage.

Disposal. Disposal is the process of transferring, donating, selling, abandoning, or destroying a system.

Environmental Assessment. An environmental assessment provides sufficient evidence and analysis to determine whether the preparation of an environmental impact statement or a finding of no significant impact is required for an acquisition program to comply with the National Environmental Policy Act.

Environmental Impact Statement. An environmental impact statement provides a detailed description of the effects, impacts, or consequences associated with designing, manufacturing, testing, operating, maintaining, and disposing of a weapon or automated information system.

Finding of No Significant Impact. A finding of no significant impact is a document that a Federal agency prepares to briefly present the reasons why an action will not have a significant effect on the human environment and why an environmental impact statement is not necessary. Additionally, the document includes the environmental assessment or a summary of the environmental assessment for the acquisition program.

Hazardous Material. Hazardous material is any waste that because of its quantity; toxicity; corrosiveness; flammability; or physical, chemical, or infectious characteristics may:

- cause or significantly contribute to an increase in mortality or an increase in a serious irreversible or incapacitating reversible illness; or
- pose a substantial present or potential hazard to human health or the environment when the waste is improperly treated, stored, transported, or disposed of.

Life-Cycle Cost. Life-cycle cost is the total cost to the Government of acquiring and owning a system over its useful life and includes the cost to develop, acquire, operate, support, and dispose of the system.

Record of Environmental Consideration. The record of environmental consideration describes the proposed action and anticipated timeframe, identifies the proponent of the proposed action, and explains why further environmental analyses and documentation are not required.

Appendix C. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition and Technology
  Deputy Under Secretary of Defense (Environmental Security)
  Deputy Under Secretary of Defense (Logistics)
  Director, Defense Logistics Studies Information Exchange
Under Secretary of Defense (Comptroller)
  Deputy Chief Financial Officer
  Deputy Comptroller (Program/Budget)

Department of the Army

Commander, Army Materiel Command
  Commander, Army Aviation and Missile Command
    Deputy for Systems Acquisition, Army Aviation and Missile Command
      Project Manager, Utility Helicopters Project Office
Assistant Secretary of the Army (Acquisition, Logistics, and Technology)
Assistant Secretary of the Army (Installations and Environment)
Auditor General, Department of the Army

Department of the Navy

Assistant Secretary of the Navy (Financial Management and Comptroller)
Deputy Chief of Naval Operations (Logistics)
Auditor General, Department of the Navy
Deputy Chief of Staff (Installations and Logistics), Headquarters, Marine Corps

Department of the Air Force

Commander, Air Force Materiel Command
Assistant Secretary of the Air Force (Financial Management and Comptroller)
Auditor General, Department of the Air Force
Chairman, Joint Acquisition Sustainment Pollution Prevention Activity

Other Defense Organizations

Director, Defense Contract Audit Agency
Director, Defense Logistics Agency
  Commander, Defense Contract Management Command
    Commander, Defense Contract Management Command East
    Commander, Defense Contract Management Command West
Director, National Security Agency
  Inspector General, National Security Agency
Inspector General, Defense Intelligence Agency

Non-Defense Federal Organizations and Individuals

Office of Management and Budget
General Accounting Office
National Security and International Affairs Division
Technical Information Center

Congressional Committees and Subcommittees, Chairman and Ranking Minority Member

Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Reform
House Subcommittee on Government Management, Information, and Technology, Committee on Government Reform
House Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform

Department of the Army Comments

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
ACQUISITION LOGISTICS AND TECHNOLOGY
103 ARMY PENTAGON
WASHINGTON DC 20310-0103

REPLY TO
ATTENTION OF

29 JUL 1999

SAAL-SA

MEMORANDUM FOR INSPECTOR GENERAL, DEPARTMENT OF DEFENSE,
400 ARMY NAVY DRIVE, ARLINGTON, VA 22202-2884

SUBJECT Draft Audit Report on Hazardous Material Management for the BLACK HAWK Helicopter Program (Project No 8AE-5037 04)

We have reviewed subject document Comments on the findings and recommendations contained in subject draft report are provided in the following paragraphs

We nonconcur with finding A, Environmental Life-Cycle Costs The finding indicates that the Utility Helicopters Project Office (UHPO) did not include environmental costs for demilitarization, disposal, and associated cleanup of the BLACK HAWK in the system life-cycle cost estimate The draft report cites several sources of DoD guidance to support its assertion that the UHPO was deficient in providing information The guidance cited is not applicable to this situation DoD Regulation 5000.2-R requires reports be submitted as part of the milestone reviews for the system The BLACK HAWK has been in production since 1978 The BLACK HAWK has not been required to have a milestone review since entering full-rate production. We understand that there is no requirement for application of this guidance retroactively to systems currently in production We recommend you rewrite the finding to indicate that the UHPO met the requirements in place at the time, but will need to comply with the guidance in the future should the BLACK HAWK modernization program cause the program to come under milestone review

We concur with recommendation 2, finding A, as written We nonconcur with recommendations 1 and 3, finding A, as written We will change our comment on recommendations 1 and 3 to "concur" if the phrase "as part of the BLACK HAWK Modernization Program" is added to each recommendation The modernization program, if funded by the Army, will place the BLACK HAWK program under the cited guidance at an acquisition program phase where the recommended cost estimate and plan will be required for milestone review The Army is currently considering funding for the BLACK HAWK modernization program in the development of the FY 2001 budget submission

We nonconcur with finding B, Programmatic Environmental, Safety, and Health Evaluation (PESHE). The finding indicates that the Utility Helicopters Project Office (UHPO) did not develop a PESHE that included program environmental responsibilities and a methodology to track and document the completion of the environmental strategy throughout the acquisition life-cycle The draft report cites DoD Regulation 5000.2-R, dated March 15, 1996, and Change 4, May 11, 1999 to support its assertion that the UHPO was deficient in providing the PESHE The report indicates that the program office must initiate the PESHE at the earliest possible milestone and update the PESHE throughout the life cycle of the program We nonconcur since the BLACK HAWK program was already in production at the time the regulation was implemented, and has had no requirement to undergo a milestone review since the regulation was initiated The UHPO has provided environmental documentation that met the requirements in place at the time the BLACK HAWK entered production

We nonconcur with recommendations 1 and 2, finding B, as written. We will change our comment on recommendations 1 and 2 to "concur" if the phrase "as part of the BLACK HAWK Modernization Program" is added to each recommendation The modernization program, if funded by the Army, will place the BLACK HAWK program under the cited guidance at an acquisition program phase where the updates to the PESHE will be required for milestone review The Army is currently considering funding for the BLACK HAWK modernization program in the development of the FY 2001 budget submission

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